This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-8 (Canceled)

9. (Currently Amended) A Huffman encoder encoding DCT coefficients into Huffman codes, comprising:

a first storage that stores a plurality of DCT coefficients;

a reader that reads a plurality of the DCT coefficients stored in said first storage at a time;

a counter that counts the number of consecutive invalid coefficients until a valid coefficient is encountered in the DCT coefficients read by said reader from said first storage to sequentially output data constituted by combinations of the number of consecutive invalid coefficients and a valid coefficient;

a plurality of second storages that respectively store data sequentially output from said counter and output the same in the order of input;

a selector that sequentially selects any of the data respectively ~~stored in~~ output from said plurality of second storages and outputs the same; and

an encoder that performs a Huffman encoding process based on the data sequentially output from said selector to generate Huffman codes.

10. (Previously Presented) A Huffman encoder for encoding DCT coefficients into Huffman codes, comprising:

a storage that stores a plurality of DCT coefficients;

a reader that reads a plurality of the DCT coefficients stored in said storage in parallel;

a plurality of data buses that respectively transfer a plurality of the DCT coefficients read by said reader from said storage in parallel;

a plurality of data storage that store input data and output the same in the order of input;

a counter that counts the number of consecutive invalid coefficients until a valid coefficient is encountered in the DCT coefficients transferred through said plurality of data buses in parallel to sequentially input data constituted by combinations of the number of consecutive invalid coefficients and a valid coefficient to said plurality of data storages;

a selector that sequentially selects any of the data respectively output from said plurality of data storages and outputs the same; and

an encoder that performs a Huffman encoding process based on the data output from said selector to generate Huffman codes.

11. (Currently Amended) A Huffman decoder for decoding Huffman codes into DCT coefficients, comprising:

a decoder that performs a Huffman decoding process on input Huffman codes to sequentially output data constituted by combinations of the number of consecutive invalid coefficients and a valid coefficient;

a plurality of first storages that respectively store data;

a selector that sequentially selects any of the data output from said decoder and sequentially writes the same in said plurality of first storage;

a generator that is provided in common to said plurality of first storages, generates DCT coefficients based on the data stored in said plurality of first storages and outputs a plurality of the generated DCT coefficients at a time;

a second storage that stores a plurality of DCT coefficients; and

a writer that writes a plurality of the DCT coefficients output from said generator in said second storage at a time.

12. (Currently Amended) A Huffman decoder for decoding Huffman codes into DCT coefficients, comprising:

a decoder that performs a Huffman decoding process on input Huffman codes to sequentially output data constituted by combinations of the number of consecutive invalid coefficients and a valid coefficient;

a plurality of data storage that store input data and output the same in the order of input;

a selector that selects any of the data output from said decoder and sequentially inputs the same to said plurality of data storages;

a generator that is provided in common to said plurality of data storages, generates DCT coefficients based on the data output from said plurality of data storages and outputs a plurality of the generated DCT coefficients in parallel;

a plurality of data buses that respectively transfer said plurality of the DCT coefficients output by said generator in parallel;

a storage that stores a plurality of DCT coefficients; and

a writer that writes a plurality of the DCT coefficients transferred through said plurality of data buses in said storage in parallel.

13. (Currently Amended) A method of Huffman encoding for encoding DCT coefficients into Huffman codes, comprising the steps of:

storing a plurality of DCT coefficients in a first storage;

reading a plurality of the DCT coefficients stored in said first storage at a time;

counting the number of consecutive invalid coefficients until a valid coefficient is encountered in the DCT coefficients read from said first storage and sequentially outputting data constituted by combinations of the number of consecutive invalid coefficients and a valid coefficient;

storing the sequentially output data in a plurality of second storages respectively and output the same in the order of input;

sequentially selecting any of the data respectively ~~stored in~~ output from said plurality of second storages and outputting the same; and

performing a Huffman encoding process based on the sequentially output data to generate Huffman codes.

14. (Previously Presented) A method of Huffman encoding for encoding DCT coefficients into Huffman codes, comprising the steps of:

storing a plurality of DCT coefficients in a storage;

reading a plurality of the DCT coefficients stored in said storage in parallel;

transferring said plurality of the DCT coefficients read from said storage through a plurality of data buses respectively in parallel;

counting the number of consecutive invalid coefficients until a valid coefficient is encountered in the DCT coefficients transferred through said plurality of data buses and sequentially inputting data constituted by combinations of the number of consecutive invalid coefficients and a valid coefficient to a plurality of data storage sequentially;

outputting the data from said plurality of data storages in the order of input;

sequentially selecting any of the data output from said plurality of data storages and outputting the same; and

performing a Huffman encoding process based on the output data to generate Huffman codes.

15. (Previously Presented) A method of Huffman decoding for decoding Huffman codes into DCT coefficients, comprising the steps of:

performing a Huffman decoding process on input Huffman codes to sequentially output data constituted by combinations of the number of consecutive invalid coefficients and a valid coefficient;

selecting any of the output data and sequentially writing the same in a plurality of first storages;

generating DCT coefficients based on the data stored in said plurality of first storages and outputting a plurality of the generated DCT coefficients at a time; and

writing said plurality of the output DCT coefficients in a storage at a time.

16. (Previously Presented) A method of Huffman decoding for decoding Huffman codes into DCT coefficients, comprising the steps of:

performing a Huffman decoding process on input Huffman codes to sequentially output data constituted by combinations of the number of consecutive invalid coefficients and a valid coefficient;

selecting any of said output data and sequentially inputting the same in a plurality of data storages;

outputting the data from said plurality of data storages in the order of input;

generating DCT coefficients based on the data output from said plurality of data storages and outputting a plurality of the generated DCT coefficients in parallel;

respectively transferring said plurality of the output DCT coefficients in parallel through a plurality of data buses respectively; and

writing said plurality of the DCT coefficients transferred through said plurality of data buses respectively in a storage in parallel.

17. (Original) A Huffman decoder for decoding Huffman codes input thereto to output decoded data, characterized in that it comprises:

a plurality of first storage means for respectively storing a predetermined number of Huffman codes among a plurality of Huffman codes;

a plurality of match detection means provided in association with said plurality of first storage means for detecting match between an input Huffman code and the Huffman codes stored in the first storage means associated therewith;

second storage means for storing a predetermined number of decoded data associated with said predetermined number of Huffman codes respectively and for outputting any of said predetermined number of decoded data in response to a signal output by said plurality of match detection means;

frequency-of-occurrence generating means for generating a frequency of occurrence based on a Huffman code input thereto; and

third storage means for storing decoded data in an address indicated by the frequency of occurrence of at least the plurality of remaining Huffman codes among said plurality of Huffman codes, receiving the frequency of occurrence generated by said frequency-of-occurrence generating means as an address signal and outputting decoded data from an address specified by the address signal.

18. (Original) The Huffman decoder according to Claim 17, characterized in that said predetermined number of Huffman codes have frequencies of occurrence higher than those of the remaining Huffman codes.

19. (Original) The Huffman decoder according to Claim 17, characterized in that said frequency-of-occurrence generating means includes:

constant storing means for storing a constant set for each code length of Huffman codes;

minimum code storing means for storing a minimum code for each code length of the Huffman codes;

code length detection means for detecting the code length of a Huffman code input thereto based on the minimum code for each code length stored in said minimum code storing means;

constant selection means for selecting any of the constants stored in said constant storing means based on the code length detected by said code length detection means; and

calculation means for calculating a frequency of occurrence based on the constant selected by said constant selection means and the input Huffman code.

20. (Original) A Huffman decoder according to Claim 17, characterized in that it further comprises decoded data selecting means or selectively outputting decoded data output by said second and third storage means.

21. (Original) A method for Huffman decoding for decoding Huffman codes to output decoded data, characterized in that it comprises the steps of:

storing a predetermined number of Huffman codes among a plurality of Huffman codes respectively;

storing a predetermined number of decoded data associated with said predetermined number of Huffman codes respectively;

detecting match between an input Huffman code and said stored Huffman codes associated therewith;

outputting any of said predetermined number of decoded data in response to said match detection signal;

storing decoded data in an address indicated by the frequency of occurrence of at least the plurality of remaining Huffman codes among said plurality of Huffman codes;

generating a frequency of occurrence based on the input Huffman code;

receiving said frequency of occurrence as an address signal; and

outputting decoded data from an address specified by said address signal.

22. (Original) A method for Huffman decoding according to Claim 21, characterized in that said predetermined number of Huffman codes have frequencies of occurrence higher than those of the remaining Huffman codes.

23. (Original) A method for Huffman decoding according to Claim 21, characterized in that said step of generating a frequency of occurrence includes the steps of:

storing a constant set for each code length of Huffman codes;

storing a minimum code for each code length of the Huffman codes;

detecting the code length of an input Huffman code based on said stored minimum code for each code length;

selecting any of the stored constants based on said detected code length; and

generating a frequency of occurrence based on the selected constant and the input Huffman code.

24. (Original) A method for Huffman decoding according to Claim 21, characterized in that the output decoded data are selectively output.